

Foreword

With the adoption of the *Science Content Standards for California Public Schools* in 1998, California made a commitment to providing all students a world-class science education. Now more than ever before, our students need a high degree of scientific literacy. The *Science Framework for California Public Schools* builds on the content standards and provides guidance for the education community to achieve that objective. As stated in the Introduction, this document is “the blueprint for reform of the science curriculum, instruction, professional preparation and development, and instructional materials in California.” With the document’s adoption, we complete the process of developing standards-based frameworks for all four core curriculum areas: reading/language arts, mathematics, history–social science, and science.

This framework gives guidance for science instruction in the elementary, middle, and high school grades. Each year in kindergarten through grade five, students receive basic knowledge in physical, life, and earth sciences, as well as develop skills in investigation and experimentation. By combining physical, life, and earth science content with investigation and experimentation standards at each grade level, the framework helps students to develop a solid foundation of science knowledge along with the abilities to observe, describe, compare, inquire, and evaluate.

Science instruction increases in complexity and depth in middle school where students focus on one science strand each year. In grade six, students focus on earth

sciences; in grade seven, on life sciences; and in grade eight, on physical sciences. The investigation and experimentation standards increase in sophistication in the middle grades and require students to formulate a hypothesis for the first time, communicate the logical connections among hypotheses, and apply their knowledge of mathematics to analyze and report on data from their experiments.

At the high school level, science content is presented as four separate strands—physics, chemistry, biology/life sciences, and earth sciences—each providing sufficient rigor to prepare students for collegiate-level study. Both the content standards and the framework were designed so that the standards could be organized either as strand-specific courses or as courses that draw content from several strands. The investigation and experimentation standards for high school science courses are more complex and ensure that students have experience in a laboratory setting.

This framework addresses a number of audiences—teachers and administrators, instructional materials developers, providers of professional development, parents, guardians, and students—as we seek to ensure that all students receive a challenging, rigorous science curriculum. The framework makes the important point that this quest takes place not in isolation from other core subjects, but rather in conjunction with them. Students must emerge from school with a standards-based mastery of science and of the other core subjects.

This document establishes guiding principles that define the attributes of

a quality science curriculum at all grade levels, a curriculum that will prepare students to meet the twenty-first century demands of higher education, careers, and participation in society. The framework

reflects the fundamental belief that all students can acquire the science knowledge and skills needed to compete and succeed in the world that awaits them.

A handwritten signature in black ink, reading "Jack O'Connell". The signature is fluid and cursive, with the first name "Jack" and last name "O'Connell" clearly legible.

JACK O'CONNELL
State Superintendent of Public Instruction

A handwritten signature in black ink, reading "Reed Hastings". The signature is stylized and cursive, with the first name "Reed" and last name "Hastings" clearly legible.

REED HASTINGS
President, California State Board of Education